

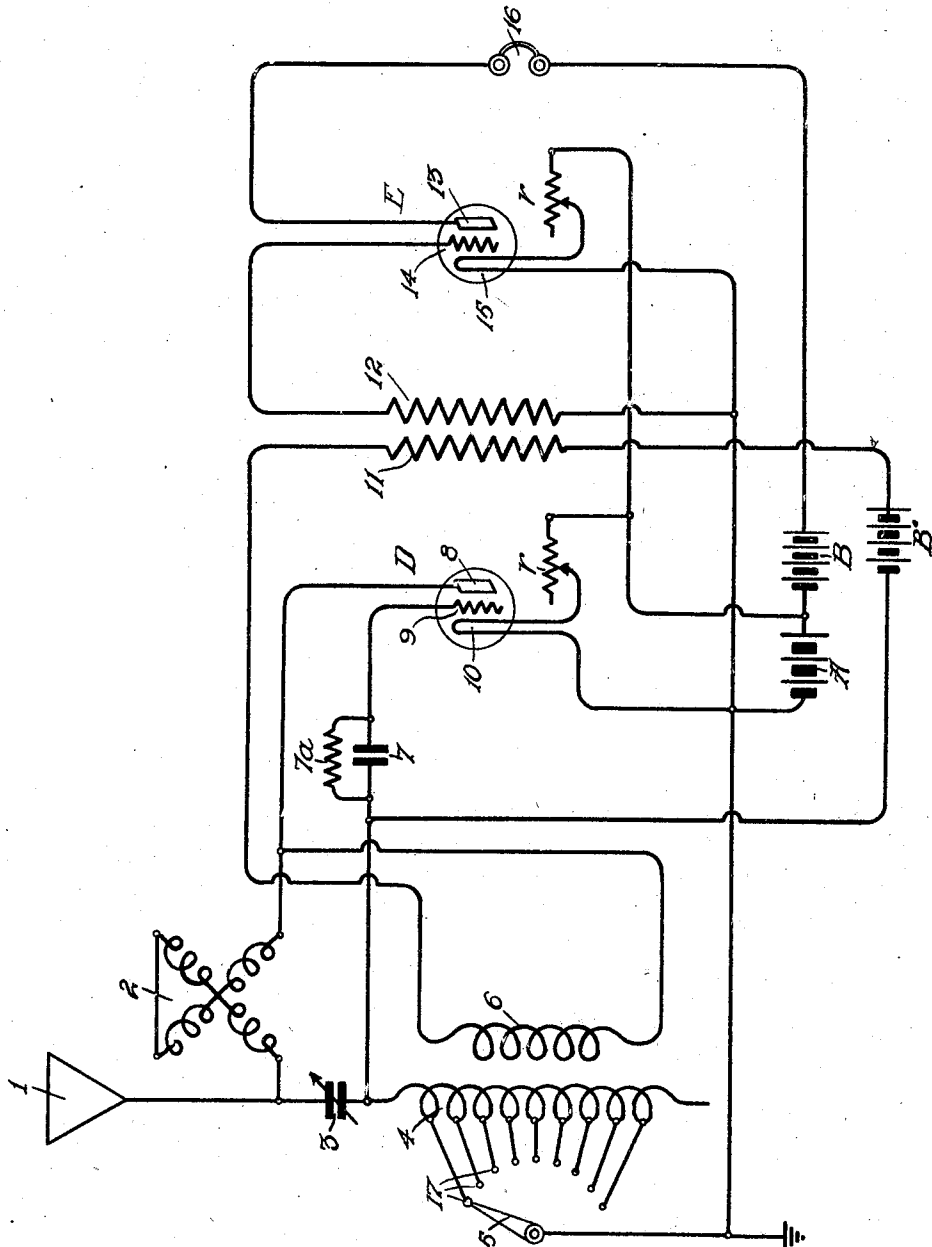
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RECEIVING CIRCUIT

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UNITED STATES PATENT OFFICE

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RECEIVING CIRCUIT

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My invention relates to wireless telegraph and telephone systems and resides in certain novel circuit arrangements for such systems and in the accompanying figure, illustrating the invention the same is shown as employed for the reception of signals. The invention is not however limited to receiving purposes but may also be used for transmitting purposes as is evident to those familiar with the art.

The objects of the invention are to provide a system in which the parts are so related as to give improved tuning area and at the same time subserve the interests of volume and clearness.

In the figure the antenna is indicated at 1, the customary variable condenser at 3, the primary of the variocoupler at 4, having taps 17 and grounded switch lever 5, as usual. The secondary of the variocoupler is shown at 6, said secondary being adjustable to provide close or loose coupling with respect to 4. The usual three element vacuum tube is indicated at D whose grid 9 is connected to the antenna between elements 3—4, said grid having the usual condenser and grid leak 7—7^a. Connected to the antenna and to the grid is also the plate 8, the latter connection having serially in it the secondary 6, the primary 11 of the usual transformer and the plate battery B', and bridged from this connection to antenna 1 is the tuning device 2, preferably a variable inductance, while from the negative terminal of battery B' a branch path extends to ground through the primary 4 of the variocoupler. The connections of the amplifier tube E including the usual filament 15, grid 14 and plate 13, are as customarily arranged and need no particular explanation.

The system as a whole is designed to operate as a feed back circuit by means of the tickler coil 6. In the tuning of the circuit the lever 5 of the variocoupler, the variable inductance 2 and condenser 3, are the principal tuning agencies and are adjusted to bring the circuit from antenna to ground through 3, and 4—5, and the circuit from antenna to ground through 2—6—11—B' and 4—5 into resonance with the incoming oscil-

lation. The varying of the coupling between 4 and 6 is also useful in establishing this resonance, but the chief part of the tuning is done by the instrumentalities 3 and 2 and the organization is quite sensitive to slight changes in the adjustment of either of these elements.

It will be seen that the plate circuit including the receiving winding 11 includes the winding 4, battery B'—11, winding 6, the plate 8 being tapped off this circuit which is in resonance when the system is tuned, so that the plate circuit is in tune with the impressed oscillations. With the arrangement just described the usual feed back circuit now very generally employed for receiving purposes has added to it the advantages of a system embracing a resonant plate circuit, and this is accomplished in a simple manner, the additional element that it is necessary to add being the variometer 2.

What I claim as new and desire to secure by United States Letters Patent, is:

In a wireless receiving system for receiving high frequency oscillations, the combination with a plate circuit and a grid circuit, an oscillation receiver, a condenser between the grid and oscillation receiver for resonating the grid circuit, a tuning device between the oscillation receiver and the plate for resonating the plate circuit, a feed back coil, a receiving winding, a source of plate current, and a continuous conductive connection extending from said plate to said grid, including in series, said feed back coil, said receiving winding and said source of plate current.

2. In a wireless receiving system an antenna circuit, including a tuning inductance and a tuning capacity, a grid circuit connected to said inductance and capacity and adapted to be resonated, a plate circuit conductively connected to said grid circuit and having serially connected therein a feed back coil, a receiving winding and a plate battery, and a tuning device bridged between said plate circuit and said grid circuit, said feed back coil being inductively related to said tuning inductance.

3. A wireless receiving system for receiving high frequency oscillations including an

antenna, a tuning inductance serially connected between said antenna and ground, a vacuum tube comprising a grid, a plate and a filament, a grid circuit extending from said grid to said antenna, a continuously variable inductance included in a plate circuit extending from said plate to said antenna, a source of steady current, and a continuous conductive circuit extending from said plate to said filament and including said source of current in series with said tuning inductance.

4. A wireless receiving system for receiving high frequency oscillations including an antenna, a series tuning inductance connected between said antenna and ground, a vacuum tube provided with an electron emitter, a grid and a plate, current means for energizing said tube, a plate tuning device, a plate circuit adapted to be resonated by said plate tuning device and extending from said plate to said antenna, a grid tuning device, a grid circuit adapted to be resonated by said grid tuning device and extending from said grid to said antenna, an audio receiving winding, and a continuous conductive circuit extending from said plate through said audio receiving winding and said series tuning inductance to said electron emitter.

Signed by me at Chicago, in the county of Cook and State of Illinois, this 26th day of March, 1923.

LEROY D. KELLOGG.

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